

Claims:

1.           An apparatus for handling sheets, comprising,  
              a sheet transfer member being movable, and  
              having a transfer surface contactable with one of the  
              sheets so that the one of the sheets is transferred by  
              the sheet transfer member,  
              a sheet supporting surface area being  
              contactable with the one of the sheet transferred by  
              the sheet transfer member, and  
              an information reader arranged to face to the  
              one of the sheet transferred by the sheet transfer  
              member and having in an information reading range  
              including an information reading point, in which  
              reading range an information is securely readable from  
              the one of the sheets.
2.           An apparatus according to claim 1, wherein  
              the sheet supporting surface area extends to be  
              contactable with the one of the sheet between the  
              transfer surface and the information reading point.
3.           An apparatus according to claim 2, wherein  
              the sheet supporting surface area extends to guide  
              therealong to the information reading range the one of  
              the sheets transferred by the sheet transfer member.
4.           An apparatus according to claim 2, wherein as  
              seen in a view direction perpendicular to a thickness  
              direction of the one of the sheets and a transferred  
              direction of the one of the sheets transferred by the  
              sheet transfer member, a tangential line of a boundary

point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface extends in a side area of an imaginary straight line passing the information reading point and the boundary point, which side area including the sheet supporting surface area.

5. An apparatus according to claim 4, wherein the tangential line intersects the sheet supporting surface area as seen in the view direction.

6. An apparatus according to claim 4, wherein the tangential line is prevented from extending parallel to the imaginary straight line.

7. An apparatus according to claim 1, further comprising a supplemental sheet transfer member being movable, and having a supplemental transfer surface contactable with the one of the sheets so that the one of the sheets is transferred by the supplemental sheet transfer member, wherein a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface of the sheet transfer members intersects with a tangential line of a boundary point of the supplemental transfer surface of the supplemental sheet transfer member from which boundary point the one of the sheets starts to separate away from the supplemental transfer surface of the supplemental sheet transfer member as

seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

8. An apparatus according to claim 1, further comprising a supplemental sheet transfer member being movable and having a supplemental transfer surface contactable with the one of the sheets so that the one of the sheets is transferred by the supplemental sheet transfer member, and first and second sheet press members being opposed to the sheet transfer member and supplemental sheet transfer member respectively in such a manner that the one of the sheets is allowed to be pressed between the sheet transfer member and the first sheet press member in a first press direction and between the supplemental sheet transfer member and the second sheet press member in a second press direction, wherein the first and second press directions intersect with each other as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

9. An apparatus according to claim 1, further comprising a sheet press member being opposed to the sheet transfer member in such a manner that the one of the sheets is allowed to be pressed between the sheet transfer member and the sheet press member at a boundary point in a press direction, wherein an

imaginary straight line passing the boundary point in a direction perpendicular to the press direction intersects the sheet supporting surface area as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member.

10. An apparatus according to claim 4, further comprising a sheet press member being opposed to the sheet transfer member in such a manner that the one of the sheets is allowed to be pressed between the sheet transfer member and the sheet press member, wherein the sheet press member has a press surface contactable with the one of the sheets so that the one of the sheets is allowed to be pressed between the press and transfer surfaces, and a compression resistance surface rigidity of one of the press and transfer surfaces is different from that of the other one of the press and transfer surfaces in such a manner that a tangential line of a boundary point of at least one of the press and transfer surfaces from which boundary point the one of the sheets starts to separate away from the at least one of the press and transfer surfaces extends in the side area of the imaginary straight line.

11. An apparatus according to claim 1, wherein the sheet transfer member is a roller rotatable on an rotational axis.

12. An apparatus according to claim 1, wherein

the sheet transfer member is a belt rotatable along an annular course.

13. An apparatus according to claim 1, further comprising a pneumatic blower for applying a pneumatic pressure to the one of the sheets in such a manner that the one of the sheets is urged by the pneumatic pressure toward the sheet supporting surface area.

14. An apparatus according to claim 1, wherein the information reader has a pair of input points opposed to each other in such a manner that the input points face to respective sides of the one of the sheet in a thickness direction of the one of the sheets to read the information through the input points.

15. An apparatus according to claim 1, wherein as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member, when the sheet supporting surface area extends straightly in parallel to a support line direction and passes the information reading range,  $\alpha$  is an inclination angle between the support line direction and a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface, L is a distance between the boundary point of the transfer surface of the sheet transfer member and the information reading point in the support line

direction,  $h$  is a distance between the boundary point of the transfer surface of the sheet transfer member and the sheet supporting surface area in a direction perpendicular to the support line direction, and  $\mu_{pg}$  is a frictional coefficient between the one of the sheets and the transfer surface of the sheet transfer member,  $\tan^{-1}(h/L) < \alpha < \tan(1/\mu_{pg})$ .

16. An apparatus according to claim 1, wherein as seen in a view direction perpendicular to a thickness direction of the one of the sheets and a transferred direction of the one of the sheets transferred by the sheet transfer member, when the sheet supporting surface area extends straightly in parallel to a support line direction and passes the information reading range,  $\alpha$  is an inclination angle between the support line direction and a tangential line of a boundary point of the transfer surface of the sheet transfer member from which boundary point the one of the sheets starts to separate away from the transfer surface,  $L$  is a distance between the boundary point of the transfer surface of the sheet transfer member and the information reading point in the support line direction,  $h$  is a distance between the boundary point of the transfer surface of the sheet transfer member and the sheet supporting surface area in a direction perpendicular to the support line direction,  $\mu_{pg}$  is a frictional coefficient between the one of the sheets and the transfer surface of the sheet transfer member,

and  $J$  is a distance in the direction perpendicular to the support line direction between the boundary point and an intersecting point between an imaginary line passing the information reading point and extending perpendicular to the support line direction and an imaginary line passing the boundary point of the transfer surface of the sheet transfer member and extending perpendicular to the tangential line of the boundary point of the transfer surface of the sheet transfer member,  $J < (h/L^2)$ , and  $\alpha < \tan(1/\mu pg)$ .

17. An apparatus according to claim 1, further comprising a supplemental sheet supporting surface area opposed to the sheet supporting surface area, contactable with the one of the sheets, and movable with respect to the sheet supporting surface area in such a manner that the one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member is urged in a direction toward the sheet supporting surface area.

18. An apparatus according to claim 17, wherein the supplemental sheet supporting surface area is opposed to the information reading range so that the one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member is urged in a direction toward the information reading range.

19. An apparatus according to claims 1, further comprising a supplemental sheet supporting surface area

being opposed to the sheet supporting surface area and contactable with the one of the sheets, and extending in such a manner that the one of the sheets contacting the supplemental sheet supporting surface area and transferred by the sheet transfer member is guided toward the sheet supporting surface area.

20. An apparatus according to claim 1, wherein the sheet supporting surface area is curved.

21. An apparatus according to claim 1, further comprising a distance detector arranged to face to the one of the sheets so that a value changing in accordance with a change in distance between the one of the sheets and the information reader is measured by the distance detector, wherein the information reader includes a light emitter for projecting a light to the one of the sheets and a light receiver for receiving the light reflected by the one of the sheets to read the information from the one of the sheets, and the light emitter is controlled in accordance with the value in such a manner that an intensity of the light emitted by the light emitter is increased in accordance with the increase of distance between the one of the sheets and the information reader.